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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,173	11/25/2003	Steven Glenn Keener	02-1231(BOE0391)	1172

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EXAMINER	
WYSZOMIERSKI, GEORGE P	
ART UNIT	PAPER NUMBER
1742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/707,173	KEENER, STEVEN GLENN	
	Examiner	Art Unit	
	George P. Wyszomierski	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-13 and 15-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-9,11-13 and 15-41* is/are allowed.

6)☒ Claim(s) *42-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The last six lines of claim 44 initially state that the coarse material is selected from a group consisting of three materials, but then state that the coarse material is selected from a group consisting of several different materials. Clarification is required.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Ruckle et al. (U.S. Patent 3,713,207), Komuro (U.S. Patent 5,258,228), or Zhu et al. (U.S. Patent 6,399,215). This is a new ground of rejection.

The prior art discloses submicron grain titanium-base materials of a composition as referred to in the instant claims. See, for instance, Ruckle column 2, line 53 thru column 3, line 3 and claim 3, Komuro claims 1 and 3, or Zhu column 4, lines 28-36 and line 53. The prior art does not disclose the process steps, referred to in product-by-process terms in the instant claims. However, it is well settled that a product-by-process claim defines a product, and that when the prior art discloses a product substantially the same as that being claimed, differing only in the manner by which it is made, the burden falls to applicant to show that any process steps associated therewith result in a product materially different from that disclosed in the prior art. See *In re Brown* (173 USPQ 685) and *In re Fessman* (180 USPQ 524). In the present

case, Applicant has not met this burden. Thus, a prima facie case of obviousness is established between the disclosures of Ruckle et al., Komuro, or Zhu et al. and the presently claimed invention.

4. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Choi et al. Journal of Alloys and Compounds article (cited on the attached PTO-1449 form), in view of Carter et al. (U.S. Patent 3,017,299) or Shibue et al. (U.S. Patent 5,372,663), further in view of pp. 586-591 and 608-620 of the ASM Handbook, and further in view of Lavernia (U.S. Patent 5,939,146) or Hebsur (U.S. Patent 6,454,992).

The Choi article discloses a process which includes cryogenically milling a relatively coarse grained titanium alloy (such as a binary Al-Ti alloy) thereby resulting in a relatively finer grained material in the range of a number of nanometers, followed by densifying the material by e.g. vacuum hot pressing. Choi does not specify the degassing or forming steps as recited in the instant claim, and does not specify the milling media as recited in the instant claim. However,

a) Both Carter et al. and Shibue et al. indicate that it was known in the art, at the time of the invention, to degas titanium alloys, and these patents further describe the advantages of employing a degassing step. Therefore the examiner's position is that it would have been obvious to incorporate a degassing step into the process as described by Choi et al.

b) The cited excerpts from the ASM Handbook indicate that it was conventional in the art, at the time of the invention, to subject titanium alloy materials to forming steps such as those utilized in the present invention.

c) The Lavernia and Hebsur patents indicate that it was known in the art, at the time of the invention, to employ a medium as presently claimed (e.g. liquid nitrogen) when cryomilling metallic materials; see Lavernia column 5, line 21 or Hebsur column 1, line 64.

Thus, the disclosure of Choi et al., together with those of Carter or Shibue et al., the ASM Handbook, and Lavernia or Hebsur would have taught the process as presently claimed to one of ordinary skill in the art.

5. Claims 1-9, 11-13, and 15-41 are allowable over the prior art of record. The prior art does not disclose or suggest a process employing the steps as presently claimed upon Ti-6Al-4V, commercially pure Ti, or Ti-5Al-2.5Sn material.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (571)-273-8300. This Central FAX Number is the result of relocating the Central FAX server to the Office's Alexandria, Virginia campus.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GEORGE WYSZOMIERSKI
PRIMARY EXAMINER
GROUP 1700

GPW
February 1, 2007